

RADIOTHERAPY OF TUBERCULOUS LYMPH NODES*

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Tuberculosis, even if it appears to be located solely in lymph nodes, the eye, ear, mouth, lungs, abdomen, genito-urinary system, or bones, must be considered as only the local manifestation of a potentially diffuse condition. And so when we turn our attention to the treatment of tuberculous glands, we must not forget the type of disease with which we are dealing and the reaction of the individual to this focus. Theoretically and practically, radiotherapy—and I will chiefly discuss x-ray—is particularly adapted to tuberculous glands, for it produces both a local and general reaction.

First let us consider the pathological histology of a tuberculous gland. The tubercle bacillus gains entrance to the cervical glands generally through the tonsils, lymphatics of the pharynx, or diseased teeth roots. The gland is the second line of defense. The growth of the tubercle within the gland structure is manifested by the attraction of lymphoid, plasma and giant cells, increase in the glandular tissue, and with the new blood vessels there is an increase in connective tissue within and about the gland. If the resistance of the individual is low in comparison with the virulence of the organism, the gland enlarges with this stroma and cellular structure. Nature's effort is to wall off and encapsulate the focus with connective tissue. The growth of this tissue shuts off the blood supply to the central portion of the gland and caseation takes place. In healing, this is replaced by fibrous tissue and ultimately calcification, or if resistance to the disease decreases it may, because of ferments within, break down and form a sinus. The anatomical importance of this defense zone is appreciated if we agree with some investigators—Van Zwaluwenburg and Grabfield among others—that one path of infection to the lungs lies from tonsil to cervical lymph glands and thence to apical pleura and lung. Apical pleurisy has been said to exist in 10 per cent of all chest rentgenograms, in 93 per cent of all cases showing tuberculous deposits in the faucial tonsils and in 59 per cent of those showing tuberculous cervical adenitis.

The reason for saying that radiotherapy, especially x-ray, is particularly adapted to the treatment of tuberculous glands is because glandular and lymphoid tissue in general is more amenable to the x-ray than is other tissue. To correctly understand x-ray therapy a few words should be said in regard to these rays. The range of wave lengths included in the term x-ray is greater than the total range of the visible spectrum—red to violet. The shorter x-rays, also termed hard rays, vibrate with greater frequency than the longer and softer rays. The hard rays penetrate to the deeper structures while the softer rays have more influence upon the skin. For treating glands, which in some instances lie a considerable distance, several centimeters, beneath the skin, the softer

rays must be cut out, and this is done by the use of aluminum filters. Consequently a dose of x-ray may be given to the deeper structures without the danger of skin burns. Another factor of considerable importance is that small doses stimulate the formation of connective tissue and favor the absorption of hyperplastic tissue, while large doses tend to destroy all tissue. As the object is to do what nature herself is trying to do, but in a shorter time, in general it is indicated to give these stimulating small doses of hard rays at shorter intervals—one to two weeks apart.

It is very natural to divide tuberculous glands into three groups, (1) the non-suppurating hyperplastic glands frequently found in children and very amenable to treatment, (2) closed suppurating or partly caseous lymphomas, and (3) open, suppurating, and partly caseous lymphomas. In glands that are purely tuberculous, while not as common in the cervical region in adults as in children, this form of treatment is most promising, and they should never be operated upon until x-ray, rest, and intensive hygiene have been tried. If with these small doses the central portion does soften, it will be very satisfactorily walled off, and a small incision or aspiration may be done to evacuate the caseous material. With continuance of x-ray even this gland will be replaced by fibrous tissue and only a small nodule will remain. If not unsightly and if completely enveloped, I think this residual left in the system may be a very beneficial factory for "auto-tuberculin." If at some later time it seems advisable to remove this small nodule, an almost insignificant scar will remain.

If presented with a gland, or group of glands, starting to suppurate, x-ray should be used first to wall off the gland, and so lessen the tendency to spread as the result of, or in spite of, the operation. The third type of lymphoma where little is left of the original gland and the sinus communicate with a mass of matted tissue, x-ray in stimulating doses destroys much of the granulating exuberant tissue and favors healing.

One criterion as to the success of radiotherapy as compared with surgery or tuberculin is the number of recurrences, local or in other parts of the body. Wolgemuth states that with hygiene alone about 24 per cent are permanently cured. Jones using tuberculin in 79 cases found that 27 were cured, 21 much better, 18 better, 8 not improved and 4 worse, and concluded that tuberculin was probably helpful when combined with hygiene, rest, good food, etc. Van Noorden reported 28 per cent of his surgical cases showed tendency of tuberculosis elsewhere, and Blois that 26 per cent developed phthisis, and 14 per cent tuberculosis elsewhere. Tichy compared 31 cases operated upon, among whom 26 per cent did not recur as against 74 per cent which did, with 27 cases treated with x-ray in which series 89 per cent had no recurrences and 11 per cent reappeared. In a small series of 20 cases treated with x-ray Fritsch found 8 cured, 10 materially improved and still under treatment, one relapsed and one died with general tuberculosis. Molyneux has used radium

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and feels that the outlook with this form of treatment is so uniformly good that surgery and prolonged periods of rest are no longer necessary.

The chief difference between surgery and x-ray in the treatment of tuberculous glands is that, while at operation a considerable amount of the focus is removed, some tuberculous tissue is still left and the system is placed in a state of hypersusceptibility predisposing to a recurrence locally or elsewhere, while with radiotherapy the glands locally are shrunken and encapsulated and by this gradual stimulation "auto-tuberculin" is manufactured, thereby favorably influencing any focus elsewhere.

In looking over the cases we have had at Stanford treated by radiotherapy I find instances of tuberculosis involving glands in the following regions: Cervical, mediastinal (pointing in a cold abscess beside the sternum), a chain of tuberculous lymphatics extending from the mid-clavicle down almost to the breast in a woman showing no evidence of mastitis, and this I think is a very unusual location for tuberculous glands, axillary, and inguinal following genito-urinary tuberculosis. In practically all of them there was diminution in the size of the glands with increased fibrous tissue surrounding them. In the case of the lymphatics on the chest wall they were later removed because their pressure on the ribs caused distress. Another case of cervical glandular tuberculosis with an apical lesion has shown distinct healing in the lesion as well as locally. A very important complication in cervical tuberculous adenitis is a pus focus in the teeth or tonsils. As this secondary infection naturally drains into the same glands, its presence is a handicap in the healing of the tuberculous infection. Frequently certain glands in a group will subside and others will not and the latter will subside more quickly when the pus focus is removed.

Radiotherapy has been used by Hubeny and others in the treatment of the tuberculous tracheo-bronchial lymph nodes, but here we may cause a pulmonary fibrosis which is not advantageous. In treating children care must be exercised not to include the thymus or other internally secreting glands as a thymic death was reported in one instance.

In conclusion: The advantages of radiotherapy over surgery are, (1) a local as well as general beneficial effect is produced in all three types of glands, thereby always justifying its use in place of, or at least prior to, surgery; (2) the individual is not left in a state of hypersusceptibility by radiotherapy; (3) no anesthetic is necessary; (4) very little or no operative scar is left; (5) no pain is connected with the treatment; (6) less likelihood of extension and recurrence; (7) the individual can continue at work and thereby save considerably in the economic aspect of his illness. Its chief disadvantage is the time element, in that several months are generally necessary in adults, while less time is required in children. A word of caution is also advisable, (1) small doses of short rays properly filtered are preferable to the larger doses; (2) do not neglect general hy-

gienic treatment, for tuberculous adenitis is a local manifestation of a lowered resistance to a diffuse infection; and (3) be sure to remove pus foci which drain into the cervical region, for where there is secondary infection, radiotherapy is less successful than with pure tuberculosis.

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Characterization of Various Forms of Endocarditis—The bacterial and the indeterminate groups of cases of endocarditis are discussed by Emanuel Libman, New York (Journal A. M. A., March 24, 1923). The indeterminate group consists essentially of two types of cases: (1) an atypical form of verrucous endocarditis, and (2) those cases usually described as terminal. By the atypical variety is meant the form of endocarditis in which the Aschoff body is said to be the characteristic lesion of the disease, the case being of rheumatic origin. Of cases clinically recognized as rheumatic fever and exhibiting at postmortem examination the typical verrucous lesions, only eighteen out of fifty-six exhibited Aschoff bodies. The clinical histories of the other thirty-eight cases made it clear that many of them at least were cases of true rheumatic fever. It is evident, therefore, that not all cases of rheumatic fever are accompanied by the specific lesion. Besides those cases that present the clinical picture of rheumatic fever and the typical verrucae on the valves, but not Aschoff bodies, there exists a group of cases presenting more or less the clinical picture of rheumatic fever (with perhaps a greater tendency to the occurrence of purpura and erythema), not showing Aschoff bodies at the postmortem examination, and accompanied by lesions on the valves which do not correspond to those usually found in rheumatic fever. Bacteria have thus far not been found in the vegetations of this group. It is possible that some of them represent unusual types of vegetation of rheumatic origin. In fatal proved cases of rheumatic fever studied by Libman, the tricuspid valve was involved in twelve of eighteen cases, or more than 66 per cent. Of fifty-six cases classed clinically as rheumatic and showing typical vegetations at the postmortem examination, but without Aschoff bodies, thirty-one were accompanied by vegetations on the tricuspid valves. In cases of acute bacterial endocarditis, the right side of the heart (tricuspid or pulmonary valves, or both) was found involved in fifteen out of fifty-six cases, or 26.8 per cent. The mitral valve was affected more often than the aortic, the same holding true of cases of subacute bacterial endocarditis. In cases of the latter disease, the right side of the heart was involved once (tricuspid) in more than one hundred hearts, and the lesion was slight. The atypical cases involve the right side of the heart frequently, in one instance the pulmonary valve being affected. This valve was not found affected in any definitely proved case of rheumatic fever. Terminal endocarditis appears to be a disease of the left side of the heart, the mitral valve being the usual seat of the disease. Other clinical phases of endocarditis are considered by Libman, and in closing he says that it is evident that the disease which was considered rare, subacute bacterial endocarditis, is now recognized as one of the common diseases. It was supposed to be a practically uniformly fatal disease. Now more and more often partial or complete recoveries are noted. Very mild cases exist, and there is a recurrent form of the disease. In other words, the interest is shifted toward the question of healing. It will be of the greatest value if an active campaign is undertaken for the purpose of preventing this as well as other forms of endocarditis.